DEEPWATER

The Integrated Deepwater System Program

INTEGRATED DEEPWATER SYSTEM
PERFORMANCE PEOPLE PARTNERSHIP
USCG

INTEGRATED COAST GUARD SYSTEMS
DEEPWATER

"Change Through Partnership"

RADM Patrick M. Stillman
Program Executive Officer

U. S. Coast Guard Deepwater Missions

Maritime Safety

- Search and Rescue
- International Ice Patrol

Maritime Mobility

- Lightering Zone Enforcement
- Foreign Vessel Inspection

Maritime Security

- Drug Interdiction
- General Enforcement of Laws and Treaties
- Alien Migrant Interdiction

National Defense

- Homeland Security
- General Defense Operations
- Maritime Interception Operations
- Military Environmental Defense Operations
- Port Operations, Security, & Defense
- Peacetime Military Engagement
- Coastal Sea Control

Protection of Natural Resources

- Marine Pollution Enforcement & Response
- Living Marine Resource Enforcement

Homeland Security Strategy

Comprehensive National Strategy

Deepwater Mission Task Sequence	*Coast Guard Maritime Homeland Security Strategy*	*National Strategy for Homeland Security*
Surveil	**Conduct layered maritime security operations**	**Prevent Terrorist Attacks within the United States**
Detect	**Establish & maintain a baseline level of maritime security**	
Classify	**Strengthen the port security posture**	**Reduce America's Vulnerability to Terrorism**
Identify	**Build & leverage Maritime Domain Awareness**	
Prosecute	**Develop required capabilities, improve core competencies & recapitalize the CG**	**Minimize the Danger and Recover from the Attacks that do Occur**
	Organize & sustain a public private sector partnership; increase international partnership	
	Prepare, equip & train forces to transition between & conduct HLS & HLD ops	

Current Coast Guard Capabilities

The average age of our Deepwater cutters is 28...The Coast Guard fleet of High and Medium Endurance Cutters is older than 37 of the 39 (naval) fleets worldwide...

- **Capability Gap – Decades of unfunded C4ISR requirements**
- **Technology Gap - 30+ year old technology hinders effectiveness & drives up costs**
- **Logistics Gap - Maintenance *costs* increasing while operational availability decreasing**

Solution: Integrated Deepwater System

Performance Based:

- Focus on capabilities not assets

Acquisition Strategy:

- ***Partner*** with system integrator
- Acquire ***integrated system of*** surface, air, C4ISR, and logistics ***systems***

Overarching Objective:

- ***Maximize Operational Effectiveness while Minimizing Total Ownership Costs***

Our Partner

- **Contract awarded 25 June 2002 to Integrated Coast Guard Systems (ICGS), a joint venture between Lockheed Martin and Northrop Grumman.**

LOCKHEED MARTIN

NORTHROP GRUMMAN

ARINC
Bell Agusta Aerospace Corp.
Bell Helicopter Textron
EADS CASA
EADS Eurocopter
Halter – Bollinger
L3 Communications
LM Management & Data Systems
LM Technology Services
M. Rosenblatt & Sons
Northrop Grumman Full Service Operations
Northrop Grumman IT
PROSOFT
United Defense, LP

People, Performance, and Partnership

Contracting Strategy

- Five-year base award with option to award up to five additional five-year award terms
- Delivery Order/Task Order Contract will break annual funding into usable segments
- Emphasis has been placed on beneficial applicability and identification of COTS/NDI solutions since program inception
- Contract incorporates many acquisition reforms, innovations and current best practices, and is constructed to provide flexibility to adapt to:
  - Budget fluctuations
  - Technology refreshment
  - Legislative mandates
  - Mission evolution

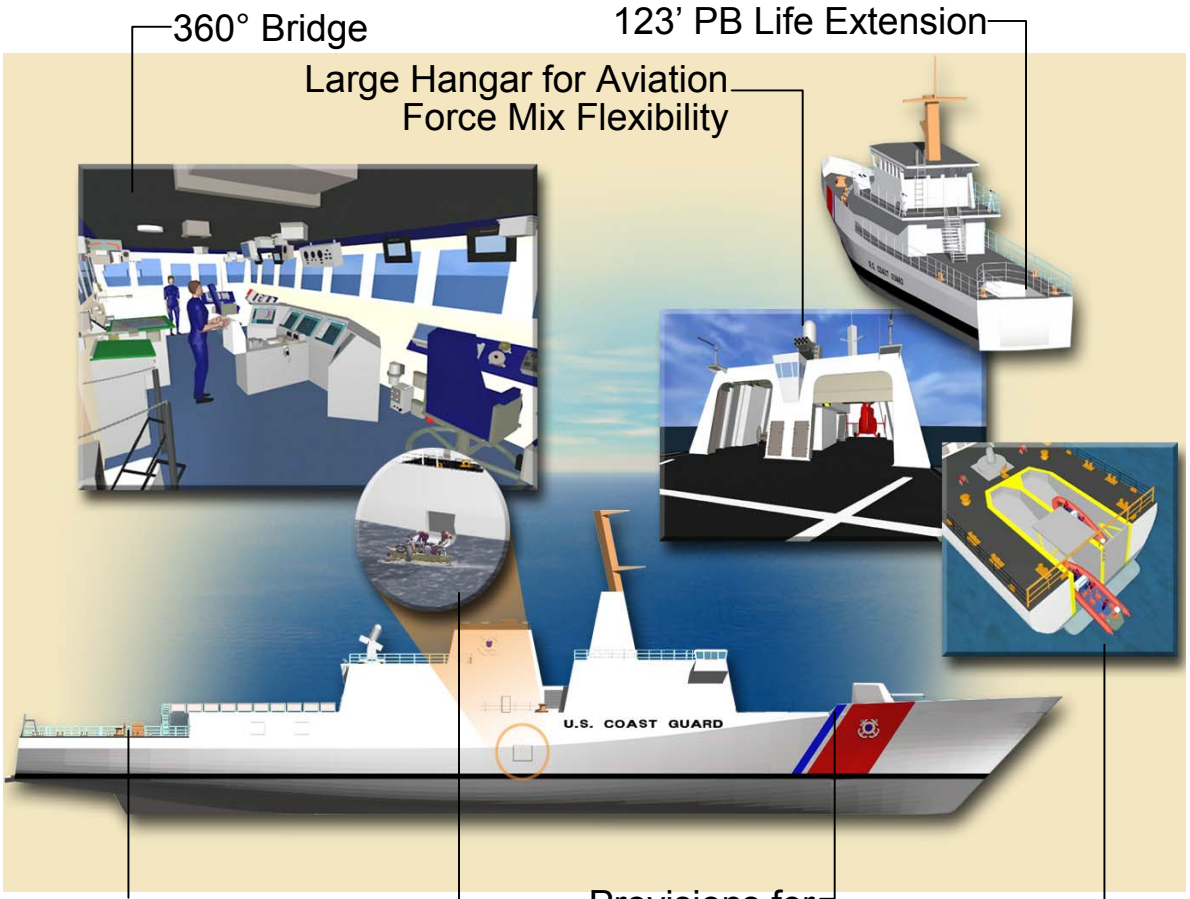
Maritime Domain Awareness

Fully Interoperable C4ISR Network-Centric Architecture

System Solution – Assets

System Solution – Network Centric

Surface Assets



Capability Improvements

- New Cutters Designed With Mission and Capability Growth
- Provisions for Interchangeable Mission Modules to Enhance Flexibility Tailored to Missions
- Stern Ramps on All Cutters and Upgraded Patrol Boats Enhance Small Boat Launch and Recovery Operations With Less Crew
- Dramatically Improved Habitability Features Include 2/4 Person Staterooms, Fitness Centers, Lounges, and Learning Centers

The Surface Ship Implementation

	2002	2007	2012	2017	2022
New Construction					
National Security Cutter					
Off Shore Patrol Cutter					
Fast Response Cutter					
Long Range Interceptor					
Short Range Prosecutor					
Upgrades					
110' Patrol Boats to 123' Patrol Boats					
Retirement	378' Cutter - 1 - - 230' Cutter - 1	378' Cutter - 8 - - - 213' Cutter - 1	378' Cutter - 3 282' Cutter - 1 - - - 210' Cutter - 11	- - 270' Cutter - 13 - - 210' Cutter - 5 123' Patrol Boat - 49	

National Security Cutter Characteristics

National Security Cutter [Delivery 2006 – 2013]

Endurance/Range	60 Days / 12,000 nmi	Length	421 ft, LOA
Fuel	650 tons	Beam	54 ft
Crew, OFF/CPO/ENL	18/12/88	Draft	20.9 ft
Propulsion Plant	CODAG	Displacement	3,886 tons, Full Load
Electric Plant	2 SSDGs + 1 Emergency Gen	Speed	28.1 kts (Sustained at 85% MCR) 29.1 kts (Max at 100% MCR)
Ship Control	Integrated Bridge		

Offshore Patrol Cutter Characteristics

Offshore Patrol Cutter [Delivery 2012 – 2022]

Endurance/Range	45 Days / 9,000 nm	Length	341 ft, LOA
Fuel	400 tons	Beam	54 ft
Crew, OFF/CPO/ENL	14/8/72	Draft	17.25 ft
Propulsion Plant	2 Diesels	Displacement	2,922 tons, Full Load
Electric Plant	2 SSDGs + 1 Emergency Gen	Speed	22 kts (Sustained at 85% MCR) 23 kts (Max at 100% MCR)
Ship Control	Integrated Bridge		

Fast Response Cutter Characteristics

Fast Response Cutter [Delivery 2018-2022]

General Characteristics:

Overall Length	130 ft
Maximum Beam	21.8 ft
Draft, Full Load	7.33 ft
Accommodations	19
Typical Operating Crew	15
Propulsion (2) Diesel Engines	3,800 HP
Speed	30 kts
Endurance	7 Days
Displacement	198 LT
Range	5,000 nm
Mission Modules(Provisions for)	1 Aft

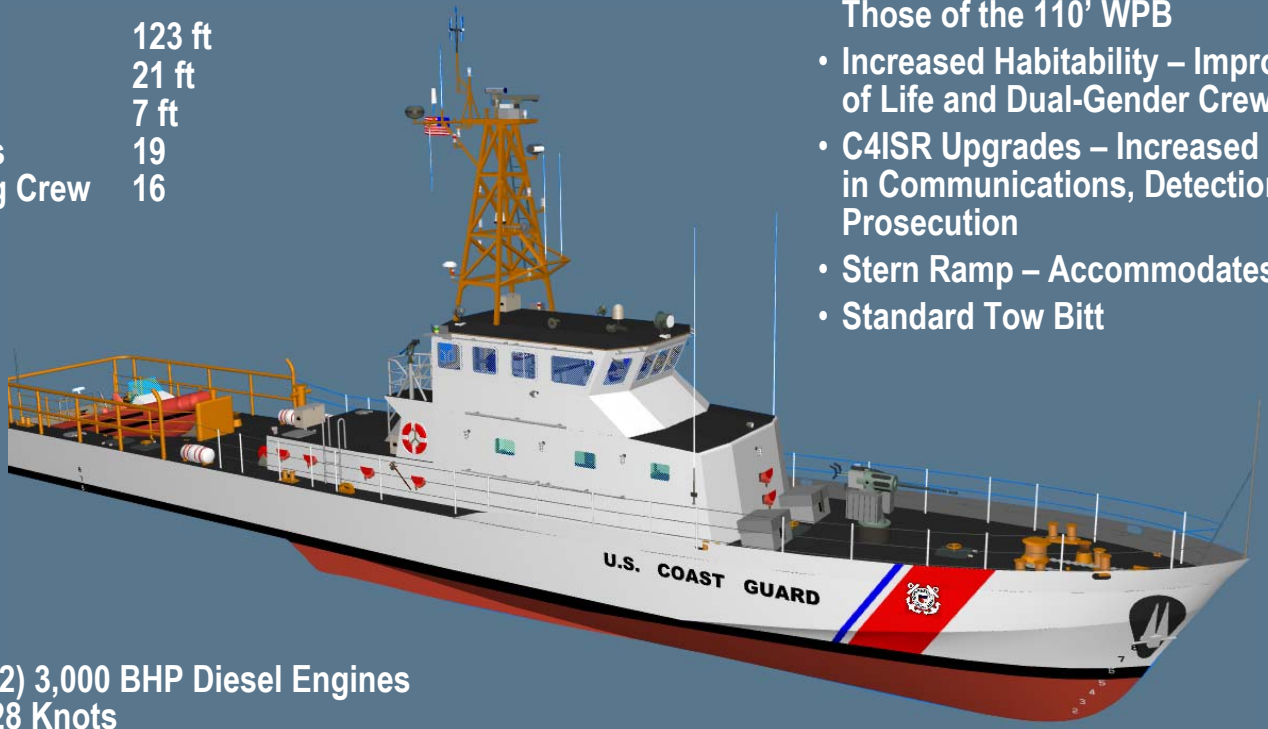
- Weapons—Stabilized 30mm and 0.50 cal Guns
- Stern Ramp Accommodates 1 SRP
- Replenishment—Fueling at Sea, Vertical Replenishment
- Increased Habitability—2/4-Person Staterooms
- High Commonality With NSC and OPC
- Reduced RCS—Reduced Signature Through Shaping
- 360° Bridge
- Standard Tow Bitt

123’ WPB Characteristics

123’ Patrol Boat (Legacy 110’ SLEP) [Delivery 2003–2010]

General Characteristics:

Overall Length	123 ft
Maximum Beam	21 ft
Draft, Full Load	7 ft
Accommodations	19
Typical Operating Crew	16



- Performance — Endurance, Speed, and Sea keeping of the 123’ Comparable to Those of the 110’ WPB
- Increased Habitability – Improved Quality of Life and Dual-Gender Crew Capable
- C4ISR Upgrades – Increased Capabilities in Communications, Detection, Prosecution
- Stern Ramp – Accommodates 1 SRP
- Standard Tow Bitt

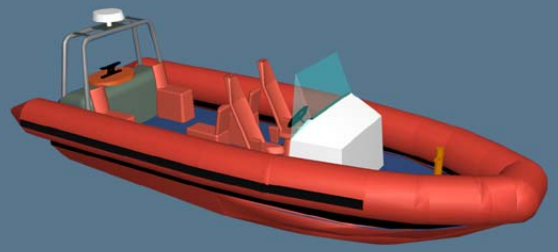
Propulsion	(2) 3,000 BHP Diesel Engines
Max Speed	28 Knots
Endurance	5 Days
Displacement	A/B/C Class 174/164/162 LT
Range	3180/3380/3300 nm

Long Range Interceptor & Short Range Prosecutor Characteristics

LRI and SRP [Delivery: 2003 – 2022]

Long-Range Interceptor

- ***Propulsion*** – Water Jet Engines for Stern Ramp Capability
- ***Capacity*** – Up to 14 Personnel With 150 lbs of Cargo
- ***Speed*** – 45 Knots

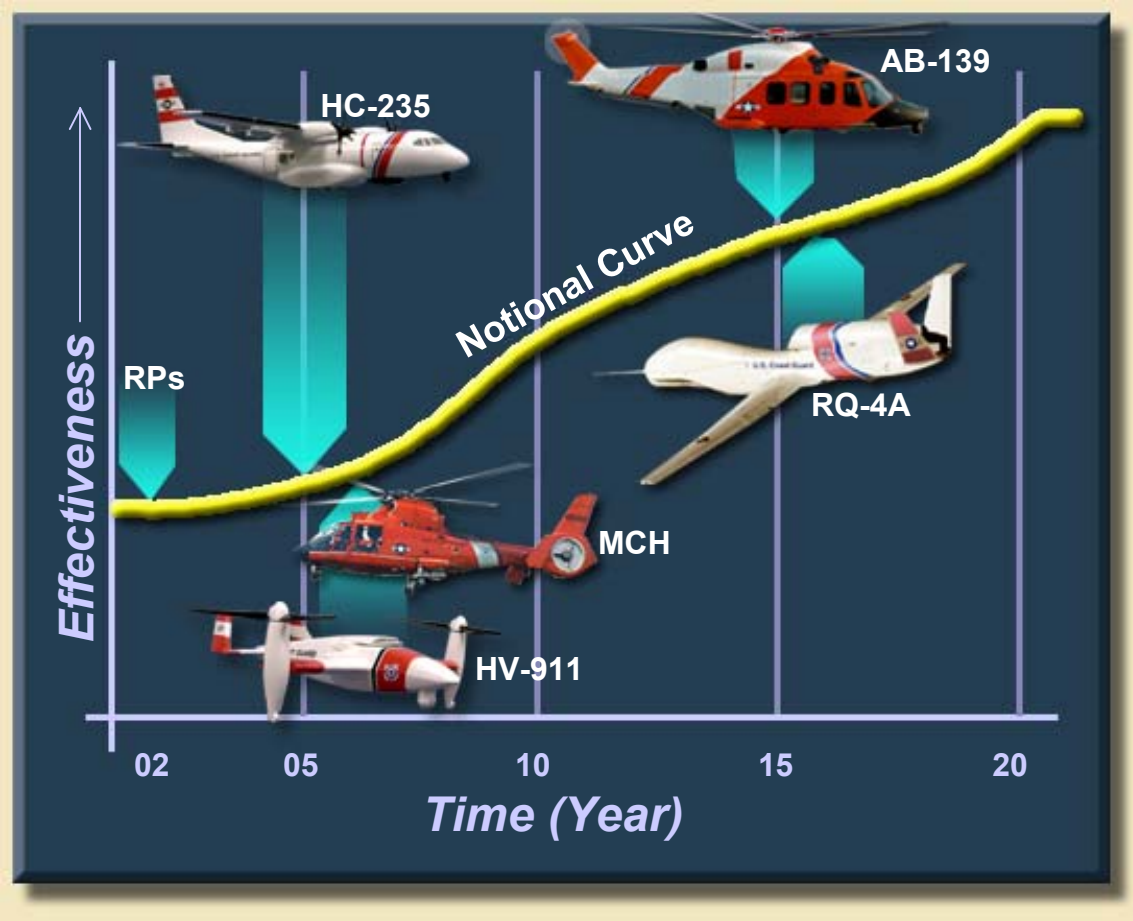


Short Range-Prosecutor

- ***Propulsion*** – Water Jet Engine for Stern Ramp Capability
- ***Capacity*** – Up to 10 Personnel With 150 lbs of Cargo
- ***Speed*** – 36 Knots

Features	Benefits
LRI	
• Slam-Mitigating Seats	• Decreased Fatigue for Boarding Teams
• Enclosed Coxswain Station	• Increased Control and Handling
• Radar	• Faster, More Effective Prosecution
• Over the Horizon Capability With Satcom and GPS	• Extended Cutter Reach
• Stern Ramp Deployment/Recovery	• Faster, Safer Operations With Less Crew
SRP	
• Slam-Mitigating Seats	• Decreased Fatigue for Boarding Teams
• Improved Communication	• Increased Control
• Excellent Sea-Keeping	• Prosecution in Rough Water
• Stern Ramp Deployment/Recovery	• Faster, Safer Operations With Less Crew

Aviation Assets



Capability Improvements

- All Aviation Assets Include Night/All-weather Capability With Radar and EO/IR Sensors
- Increased Communications and Common Operating Picture Capability
- MPA and VUAV Introduced in First Five Years Support Early Retirement of High-Cost-to-Operate Legacy Aircraft


Long Range Surveillance


Maritime Patrol Aircraft


High Altitude UAV


Multi-mission Cutter Helicopter


VTOL Recovery and Surveillance Aircraft


VTOL Unmanned Air Vehicle

The Aviation Asset Implementation

	2002	2007	2012	2017	2022
New Construction					
Maritime Patrol Aircraft					
Vertical Unmanned Aerial Vehicle					
Vertical Recovery System					
High Altitude Unmanned Air Vehicle					
Upgrades					
Dolphin HH-65					
Retirement					
Hercules Falcon Jayhawk	HC-130 - 1 HU-25 - 25	HC-130 - 7 HU-25 - 16	HC-130 - 11 - HH-60 - 12	HC-130 - 5 - HH-60 - 30	

Maritime Patrol Aircraft (MPA) Characteristics

EADS CASA 235-300M "Persuader" MPA – Delivery 2006-2012

General Characteristics

Length	70 ft 1 in
Wing Span	80 ft 5 in
Cabin Length	31 ft 6 in
Cabin Height	6 ft 1 in
Cabin Width	8 ft 9 in
Maximum Take-off Weight	36,380 lb
Maximum Landing Weight	36,380 lb
Maximum Payload	11,200 lb
Fuel Capacity	1,379 gal
Number of 88" x 108" Pallets	2
Maximum Cruising Speed	240 ktas

- Proven Military Twin Turboprop
- Extended Range Fuel System
- In Service as MPA
- Most Cost-Effective MPA Alternative
- Palletized Fully Integrated Tactical System
- Quick Change to Cargo or Passenger Role
- Rear Cargo Ramp

Take-off Distance to 50 ft (S/L, ISA, MTOW)	3,360 ft
Landing Distance from 50 ft (S/L, ISA, MTOW)	2170 ft
Maximum Range	2,224 nm
Range with 4000 kg Payload (8800 lb)	1,030 nm
Engines	2 x General Electric CT7-9C3 turboprop engines
Propellers	Hamilton Standard 14RF-37 (Four Bladed)

Vertical Unmanned Air Vehicle Characteristics

Bell HV-911 "Eagle Eye" VTOL Unmanned Air Vehicle

Flight-Ready Configuration

General Characteristics

- All Composite Construction
- Fully Shipboard Deployable
- Low Maintenance (<1 MMH/FH)
- Up to 4 VUAVs per NSC or OPC
- Modular Mission Payloads (FLIR/EO, Radar, etc.)
- High Speed Dash (220 kts), Cruise (200 kts)
- Airplane Loiter (90 kts)
- 5.9 Hour Endurance
- Maximum Height 5.7 ft
- Maximum Length 17.23 ft
- Maximum Wing Span 23.6 ft

Stowed Configuration

Multi-Mission Cutter Helicopter (MCH) Characteristics

HH-65 MCH – Delivery 2005-2015

General Characteristics

Length	46.91 ft *(44.4 ft)*
Wing/Rotor Span	41.33 ft Rotor
Maximum Takeoff Weight	9,500 lbs *(9,200 lbs)*
Payload Weight (w/Fuel)	3,190 lbs
Empty Weight	6,333 lbs
Fuel Capacity	2,164 lbs *(1,969 lbs)*
Maximum Airspeed	165 kts
Cruise Speed	120 kts
Economy Speed	75 kts
Service Ceiling	15,000 ft/ 7,510 ft Hover
Maximum Endurance	3.5 hrs *(2.9 hrs)*
Maximum Range	467 nm *(348 nm)*
Operational Radius	178 nm *(150 nm)*
Propulsion Type	Turbomeca Arriel 2C2 *(LTS-101)*
Number of Engines	2
Cargo Sling Hoist Capability	1,500+ lbs
Rescue Hoist Capability	600 lbs

- Leverages USCG Legacy Asset
- Low-Cost, Low-Risk Major Airframe Upgrade
- Increased TOGW, Range, Endurance
- New Avionics Common Fully Shipboard Deployable
- Margins for Use in Armed Helo Role
- Complements VUAV on NSC, OPC, and WMEC 270

Vertical Recovery and Surveillance (VRS) Characteristics

Bell-Agusta AB-139 VTOL Recovery and Surveillance (VRS) Delivery 2014-2022

General Characteristics

Length O/A	54.67 ft
Max Airspeed	185 kts
Cruise Airspeed	157 kts
Economy Airspeed	80 kts
Service Ceiling	16,750 ft
Maximum Endurance	5.0 hrs
Maximum Range	511 nm
Propulsion	2 Pratt & Whitney PT6C-67C
Cargo Capacity	6,000 lbs
Rescue Hoist Capacity	600 lbs
Radius Of Action (SAR)	211 nm
Main Rotor	5 Blade Fully Articulated Elastomeric
Tail Rotor	4 Blade Fully Articulated Elastomeric
FAA Single Pilot IFR	Certified 3/2003
Rotor Span	45.27 ft
Max T/O Weight	14,550 lbs
Useful Load	5,250 lbs
Fuel Capacity	4,088 lbs

High Altitude Unmanned Air Vehicle (HAUAV) Characteristics

Northrop Grumman RQ-4A VTOL High Altitude (UAV) – Delivery 2016

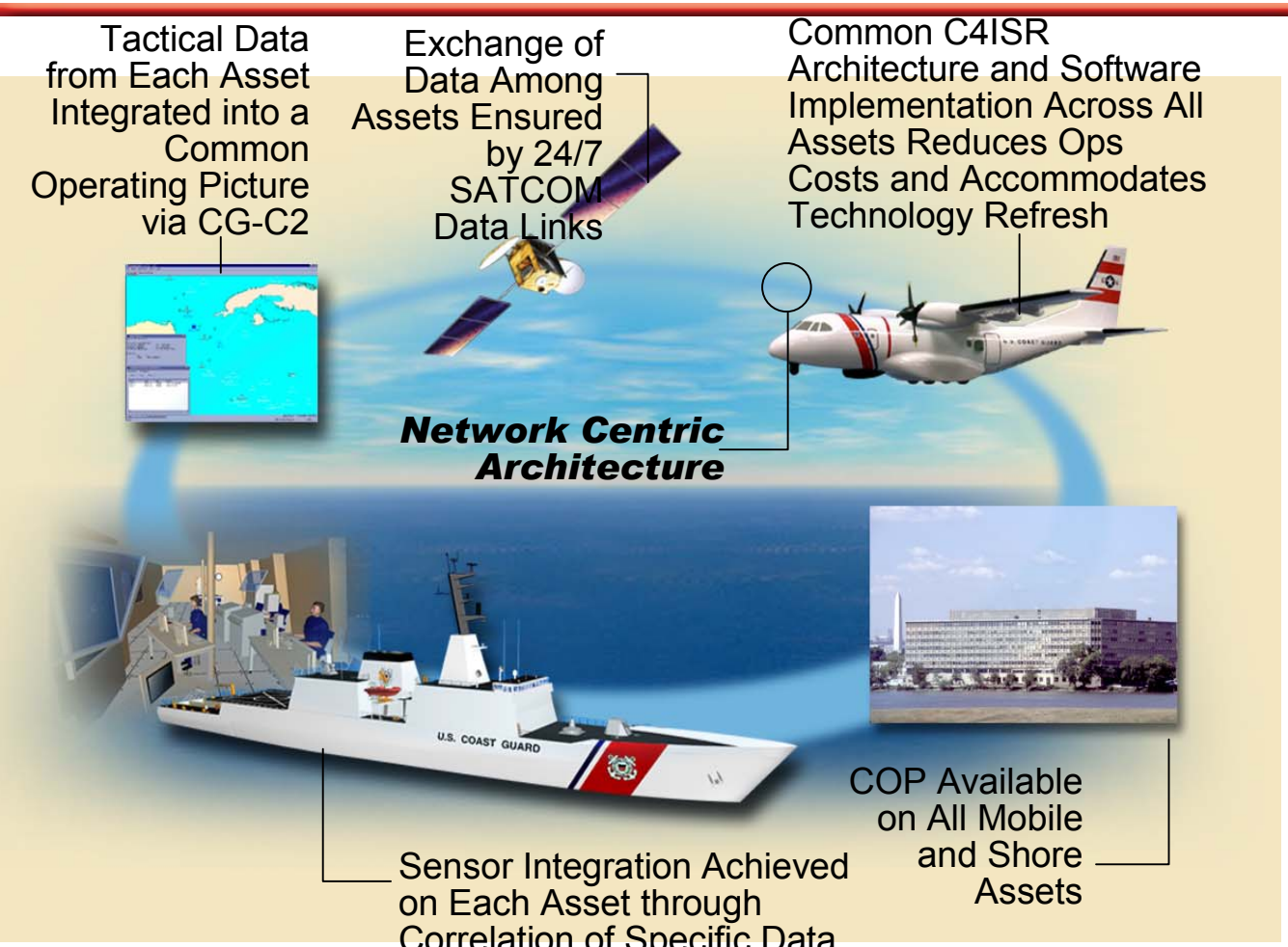
General Characteristics

- DoD Surveillance Asset
- Low Risk After USAF Production, Testing, Fielding
- Huge Surveillance Areas Covered per Mission
- >3,000 nm Range, >30 Hours Endurance
- High-resolution Sensors (FLIR/EO, SAR, ISAR/GMTI)
- Range Endurance Allows Operation from Only 2 Sites
- Centralized Control from Ground Control Station
- GCS Integrated into CG-C2 System

General Specifications

- Power Plant: Single Allison AE3007H (Approximately 7,000 Pounds Thrust)
- Length: 44 feet
- Height: 15 feet
- Weight: Approximately 25,600 Gross Take-off Pounds
- Wingspan: 116 feet
- Speed: 300 to 400 Kt True Air Speed (KTAS)
- Range: 1,200 nm Radius with 24 Hours On Station
- Loiter Altitude: 50,000 to 65,000 feet
- Fuel Capacity: 14,800 Pounds, JP-8

The C4ISR Capability

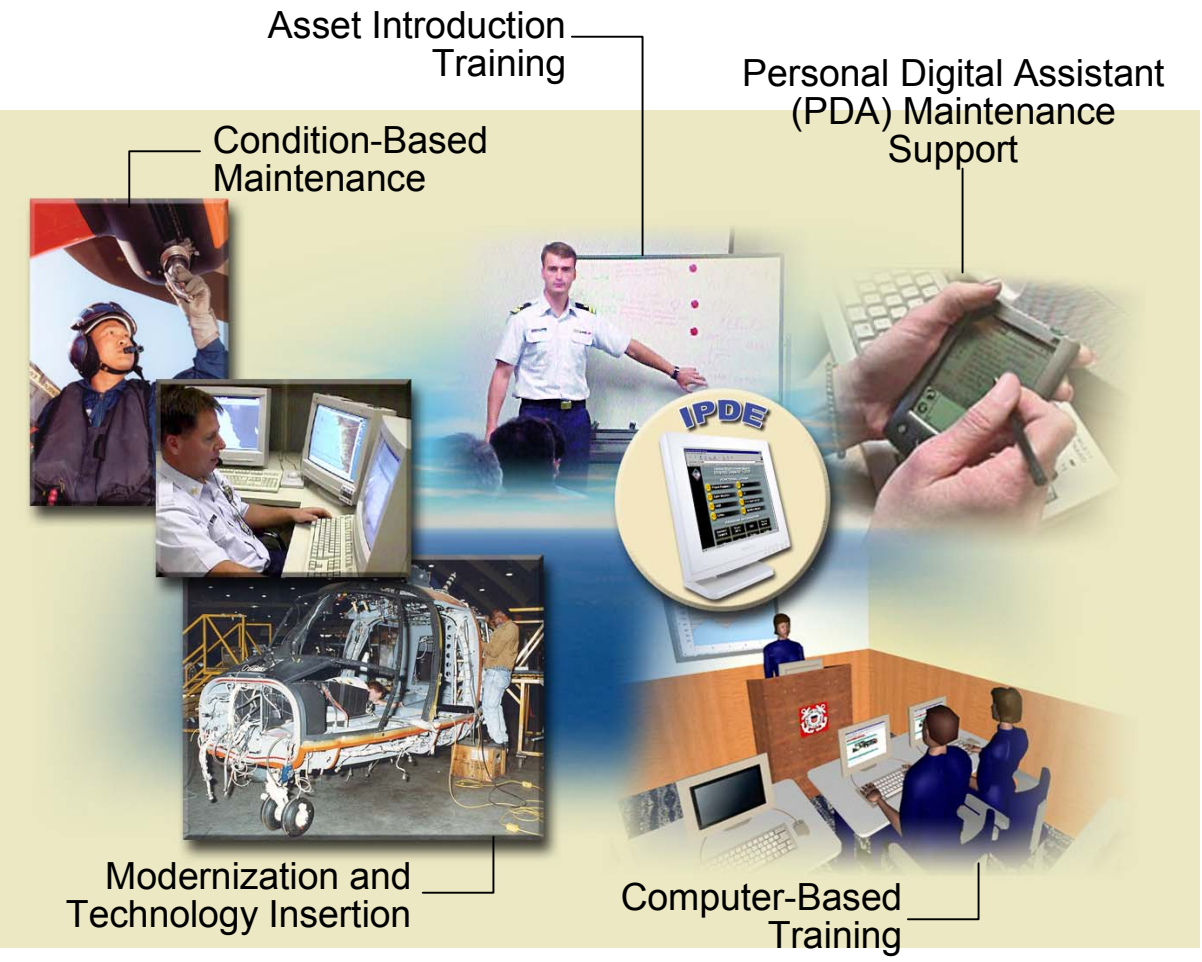


Capability Improvements

- Common Command and Control Systems is Fully Integrated With All Sensors, Communications, and Legacy Interfaces
- Interoperability and Maritime Domain Awareness Established by IDS Assets and National Sources
- Imbedded Technical Refresh to Prevent Future Obsolescence

Early Increased Situational Awareness, Surveillance, and Command is Provided through a Common Operating Picture to Answer Homeland Security Requirements

The Manpower and ILS Enhancements

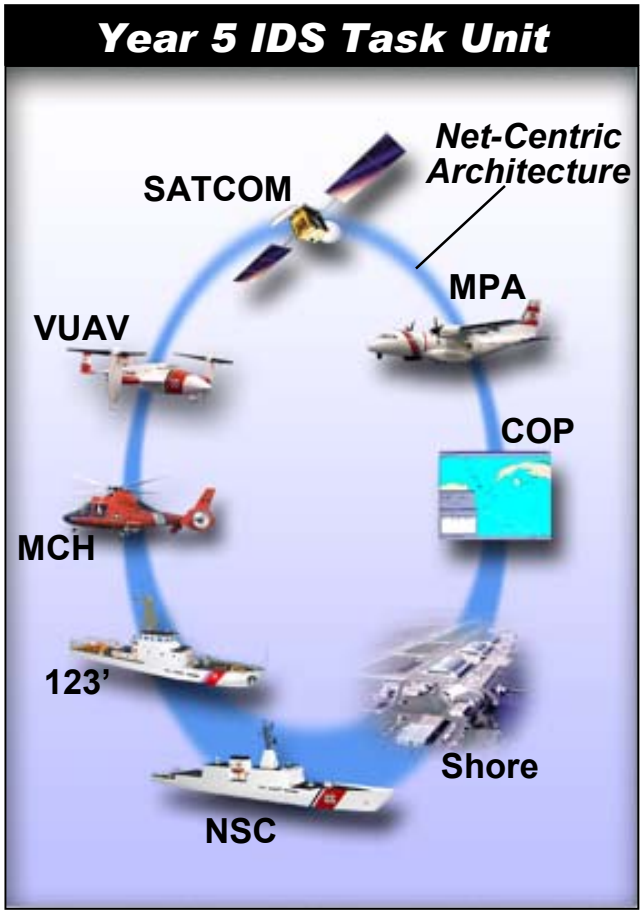


Capability Improvements

- Increased Automation Reducing Operator Workload, Training Requirements, and Enables Condition-based Monitoring
- Integrated Product Data Environment (IPDE) Maintains a Single, Authoritative Data Set Program-wide for Program Performance and Metrics
- Equipment Selection, Sparing, and Training Based on RMA Improves Readiness, Availability, and Supports System Response Reducing Operating Expenses

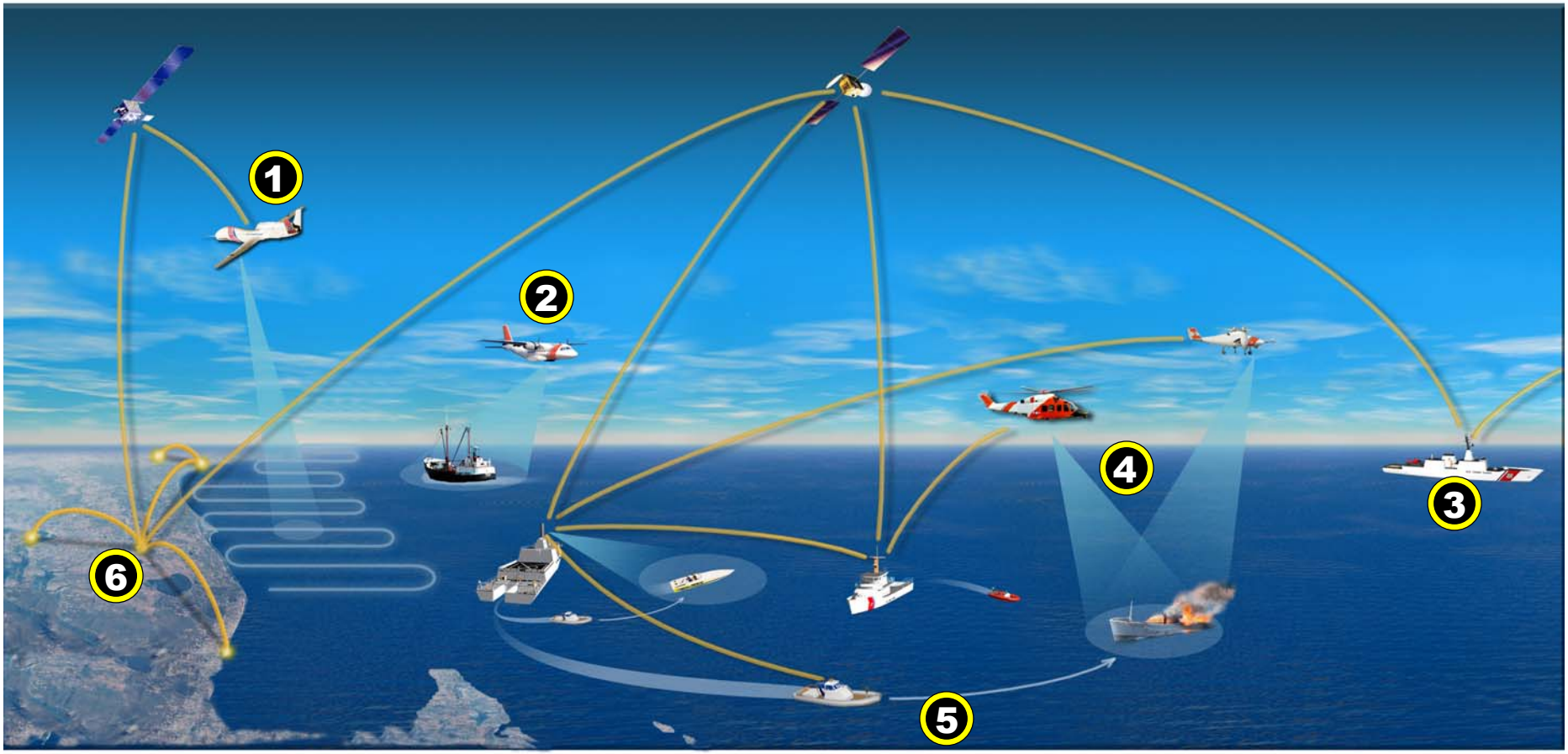
Increased Automation and State-of-the-Art Technology, Decreased Manpower Requirements and Reduced Total Ownership Cost

System of Systems at Year 5



Low Risk Transition to Full Capability

CONOPS Summary



1 HAUAV Wide Area Surveillance
2 MPA Prosecution
3 NSC Interoperability
4 Multi Asset Operation
5 Over-the-Horizon Operations
6 Shore-based Command Center

Why Deepwater?

- Secures the Homeland
- Enables the Coast Guard to
  - Maintain credible presence in key maritime regions to deter potential threats to U.S. sovereignty
  - Exercise sea control and projection of law enforcement and naval/maritime power should deterrence fail
- Provides Nation best national security, military, law enforcement, and search & rescue capability for taxpayer's dollar
- Ensures USCG remains best CG in the world – military, multimission, maritime

"Our men and women in uniform deserve the best weapons, the best equipment, the best training…"

President George W. Bush , State of the Union Address, January 2002